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| 10/597,708 | 08/04/2006 | Arjan Franklin Bakker | NL 040158 | 5226 |

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| EXAMINER |
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TURNER, SAMUEL A

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2877

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02/19/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/597,708 | Applicant(s) BAKKER, ARJAN FRANKLIN | |
| | Examiner SAMUEL A. TURNER | Art Unit 2877 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/24/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement(s) submitted on 24 November 2008 has been considered by the Examiner.

Response to Arguments

Applicant's arguments filed 24 November 2008 have been fully considered with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Applicant's amendment has overcome the objection of claims 1-7 under 37 CFR 1.75(c).

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2 there is no antecedent basis for "the second reflector". Claim 1 only provides antecedent basis for "an elongated plane mirror reflector on the stationary base".

Claim Rejections - 35 USC § 102

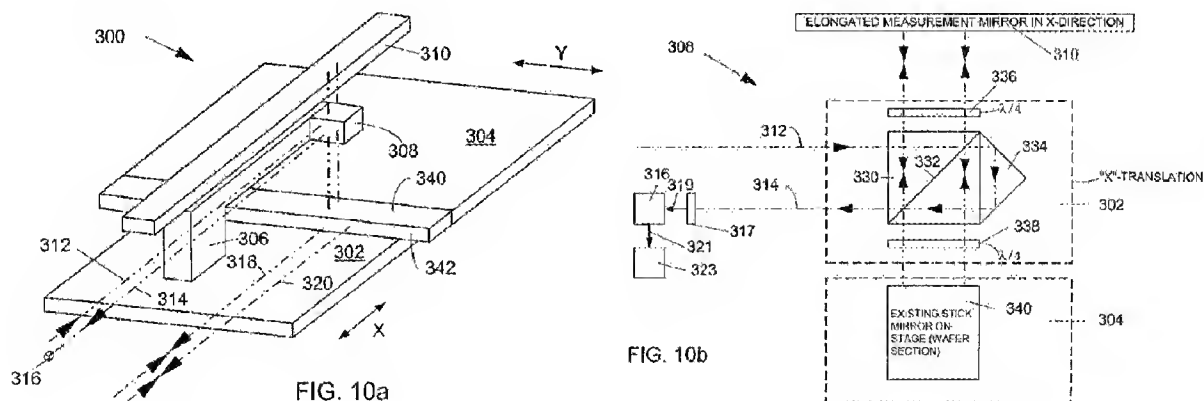
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Applicant's amendment has overcome the rejection of claims 1, 2, 5, and 7 under 35 U.S.C. § 102(b) as being anticipated by Hamada et al(6,570,641).

Claims 1, and 6-9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hill(6,650,419).



With regard to claim 1, Hill teaches a system(Fig. 1) for positioning a product, comprising a chuck for supporting the product(Fig. 1, 304), an intermediate stage supporting said chuck(Fig. 1, 302), and a stationary base supporting said intermediate stage(Fig. 1, 310; column 17, lines 53-59), whereby the chuck can move with respect to the intermediate stage in a first direction X(Fig. 1, Y) and the intermediate stage can move with respect to said stationary base in a second

direction Y(Fig. 1, X), furthermore comprising at least one laser interferometer for measuring the position of the chuck relative to the stationary base, a main part of said laser interferometer including optical components for receiving and directing a laser(Fig. 1, 308), the main part being attached to said intermediate stage and being movable therewith(Fig. 1, 308; by support 306) for measuring the distance between an elongated plane mirror reflector on the chuck that is elongated in the first direction X(Fig. 1, 340) and an elongated plane mirror reflector on the stationary base that is elongated in the second direction Y(Fig. 1, 310). Note that the XY coordinates in Hill are switched to those found in the claimed invention.

As to claim 6/1, Hill teaches wherein the main part is attached to said intermediate stage for measuring the distance in the third direction Z between the reflector on the chuck and the reflector on the stationary base, which third direction Z is perpendicular to the first direction X and the second direction Y(column 18, lines 14-19).

With regard to claim 7, Hill teaches a method for positioning a product by means of a system comprising a chuck for supporting the product(Fig. 1, 304), an intermediate stage supporting said chuck(Fig. 1, 302), and a stationary base supporting said intermediate stage(Fig. 1, 310; column 17, lines 53-59), whereby the chuck can move with respect to the intermediate stage in a first direction X(Fig. 1, Y) and the intermediate stage can move with respect to said stationary base in a second direction Y(Fig. 1, X), the method comprising attaching at least one laser

interferometer to the intermediate stage, the laser interferometer further comprising a main part including optical components for receiving and directing a laser, the main part being movable with the intermediate stage(column 17, lines 53-67), and measuring the position of the chuck relative to the stationary base by measuring a distance between a first elongated reflector on the chuck(Fig. 1, 340) and a second elongated reflector on the stationary base(Fig. 1, 310) using the laser interferometer(column 18, lines 1-27). Note that the XY coordinates in Hill are switched to those found in the claimed invention.

As to claim 8/7, Hill teaches wherein the first elongated reflector is elongated in the first direction X(Fig. 1; 340,Y) and the second elongated reflector is elongated in the second direction Y(Fig. 1; 310,X).

As to claim 9/7, Hill teaches moving the chuck relative to the stationary base and measuring the position of the chuck relative to the stationary base during such movement (column 17, lines 53-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Applicant's amendment has overcome the rejection of claims 3 and 4 under 35 U.S.C. § 103(a) as being unpatentable over Hamada et al(6,570,641) in view of Cameron(5,363,196).

Applicant's amendment has overcome the rejection of claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Hamada et al(6,570,641) in view of Hill(6,650,419).

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hill(6,650,419).

As to claim 2/1, Hill **fails to teach** the second reflector having a length larger than the maximal displacement of the intermediate stage in said second direction Y.

CLAIM 2:

Hill fails to define an explicit length for the reflector 310 except to state that the distance between the mirror 340 and the mirror 310 is measured as the stages 302 and 304 are moved.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mirror 310 to be longer than the displacement distance of the stage 302. If mirror 310 were shorter than the displacement of stage 302 then the displacement could not be measured over the full displacement of the stages 302 and 304. By making mirror 310 longer than the displacement of stage 302 no information is missed during displacement of the stages 302 and 304.

Claims 3-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hill(6,650,419) in view of Hamada et al(6,570,641) and Cameron(5,363,196).

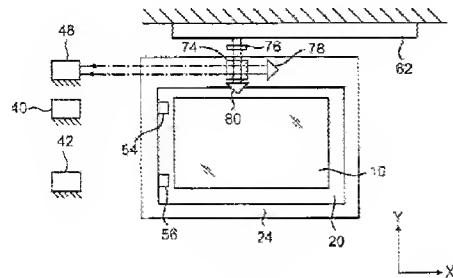


FIG. 5B

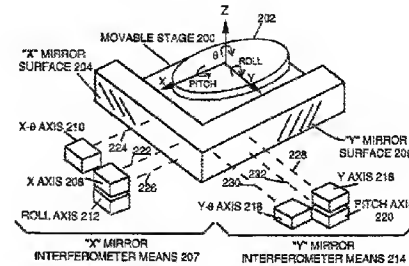


FIGURE 2

As to claim 3/1, Hill **fails to teach** two laser interferometers each having a main part that is attached to said intermediate stage and movable therewith, each main part for measuring the distance between a respective first reflector on the chuck and the same elongated plane mirror reflector on the stationary base.

As to claim 4/1, Hill **fails to teach** three laser interferometers each having a main part. the respective main parts of the three laser interferometers are attached to said intermediate stage and movable therewith, for measuring distances in the first direction X between one or more first reflectors on the chuck and one or more plane mirror reflectors in the stationary base.

As to claim 5/1, Hill **fails to teach** the chuck further comprising a cube corner reflector.

CLAIMS 3-5:

Hamada et al teach one interferometer mounted on the intermediates stage for measuring the displacement of a corner cube reflector(Fig. 5B, 80) mounded on a

stage(Fig. 5B, 20) relative to a stationary base supporting an elongated reflector(Fig. 5B, 62).

Cameron teaches using a plurality of interferometers, as many as four, to measure the displacement of a stage relative to a plurality of fixed reflectors(Fig. 2).

With regard to claims 3-5, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hill by moving the off-stage interferometer(column 17, lines 53-67) which measures the displacement between the stage 304 and stationary base along the X direction to the intermediate stage, as found in Hamada et al. The motivation for this modification would have been to exclude displacements in the measurement direction caused by the intermediate stage 302. Further, it would have been obvious to increase the number of interferometers mounted on the intermediate stage 304 which measure the displacement in the X direction in order to measure additional degrees of freedom experienced between the stage 304 and the stationary base. The motivation for this modification is found in Cameron which teaches using three interferometers to measure the rotation and pitch(roll) in addition to displacement.

Action Made Final

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Samuel A. Turner/
Primary Examiner
Art Unit 2877